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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/720,594	11/24/2003	Frederic M. Newman	08876.	5037

7590 03/06/2009

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EXAMINER	
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ART UNIT	PAPER NUMBER
3661	

MAIL DATE	DELIVERY MODE
03/06/2009	PAPER

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte FREDERIC M. NEWMAN

Appeal 2008-6279
Application 10/720,594
Technology Center 3600

Decided:[1] March 6, 2009

Before WILLIAM F. PATE, III, LINDA E. HORNER, and
KEN B. BARRETT, *Administrative Patent Judges*.

BARRETT, *Administrative Patent Judge*.

DECISION ON APPEAL

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[1] The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, begins to run from the decided date shown on this page of the decision. The time period does not run from the Mail Date (paper delivery) or Notification Date (electronic delivery).

STATEMENT OF THE CASE

Frederic M. Newman (Appellant) seeks our review under 35 U.S.C. § 134 from a final rejection of claims 4-6, 8, and 10-16. We have jurisdiction under 35 U.S.C. § 6(b).

SUMMARY OF THE DECISION

We AFFIRM.

THE INVENTION

Appellant's claimed invention pertains to a system for controlling the speed of the traveling block on an oil well service rig. (*See* Spec. 2, ll. 2-4; *id.*, 3, ll. 4-11.) According to the Appellant, the invention slows or stops the block so as to avoid "crown out," or traveling beyond the upper most safe position. (Spec. 2, ll. 9-11; *id.*, 3, ll. 8-9.) Claim 4, reproduced below, is representative of the subject matter on appeal.

> 4. A process for controlling the speed of a traveling block of a well workover rig, comprising:
>
> determining the speed of the traveling block, the position of the traveling block within a traveling range, and the weight on the traveling block, wherein the weight of the traveling block is measured by a weight sensing device;
>
> comparing the speed of the traveling block to a maximum velocity value, wherein the maximum velocity value is determined as a function of the measured weight on the traveling block and wherein the maximum velocity value in an upper slow down zone of the traveling range of the traveling block is lower than the maximum velocity value at a point immediately below the upper slow down range, the length of the upper slow down zone being proportional to the momentum of the traveling block; and

adjusting the speed of the traveling block so as to maintain its speed at or below the maximum velocity value.

THE REJECTION

The Examiner relies upon the following as evidence of unpatentability:

Richardson	US 4,545,017	Oct. 1, 1985
Ruddy	US 6,527,130 B2	March 4, 2003

Claims 4-6, 8, and 10-16 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Richardson and Ruddy.

ISSUE

The issue before us is whether the Appellant has shown that the Examiner erred in rejecting claims 4-6, 8, and 10-16 under 35 U.S.C. § 103(a) as being unpatentable over Richardson and Ruddy.

FINDINGS OF FACT

We find that the following enumerated findings are supported by at least a preponderance of the evidence.

1. Richardson discloses a computerized system for controlling the speed of the traveling block on a well drilling apparatus in order to prevent the block from crashing into the crown block. (Richardson, col. 3, ll. 13-19; col. 3, l. 67 – col. 4, l. 23.)

2. Richardson discloses a table with examples of various velocity values and locations within the field of travel for an empty block and a loaded block. (Richardson, col. 8, l. 63 – col. 9, l. 22.) Richardson elaborates on Example 1 of the table as follows:

> Referring to Example 1 of Table I, an empty traveling block is being raised at the rate of 7.5 feet per second. These parameters are determined by computing changes in elevation detected by transmitter/receiver device 26. When transmitter/receiver 26 determines that traveling block 27 is within 20 feet of crown block 6, the computer 28 will take action if the drill rig operator does not manually take such action in order to stop traveling block 27 within a safe distance of, for example, about one foot from crown block 6. The change in elevation or speed is monitored 9 times/per second. At 19 feet from crown block 6, traveling block 27 must have been reduced to a speed of 7.1 ft/sec, at 18 feet to a speed of 6.7 ft/sec, and so forth until the speed of traveling block 27 has been reduced to about 0.3 ft/sec at 2 feet and stopped within about 1 foot from crown block 6. If the speed of travel being monitored exceeds these preselected parameters computer 28 will cause the main brake to be applied and the throttle and clutch released.

(Richardson, col. 8, ll. 24-44.) Richardson also discloses a second example in which a loaded block is raised with a velocity of three feet per second. (*Id.*, col. 8, ll. 44-46.) In this second example, the computer must act to stop the block within one foot of the crown block. (*Id.*, col. 8, ll. 46-48.) Richardson explains that the actions necessary to stop a heavily loaded block are different than those with empty block. (*Id.*, col. 8, ll. 52-58.)

3. Richardson also states:

> Furthermore, although in the examples of Table I the traveling block load is merely indicated as empty or loaded, the exact load as measured by dead line weight indicator 32 in combination with transducer 33 may be utilized to more precisely compute the amount of distance required to slow down the traveling block and therefore the velocity of the traveling block at each distance from the crown block or working floor at which overriding action must be taken.

(Richardson, col. 9, ll. 27-35.)

4. Therefore, Richardson teaches that the weight of the traveling block is measured by weight sensing device (dead line weight indicator 32) and that the maximum velocity value (the velocity at which overriding action must be taken) is determined as a function of the measured weight on the traveling block.

5. Ruddy discloses a system for accurately measuring the load on a crane hoist during operation. (Ruddy, col. 2, ll. 34-41.)

6. Ruddy, in describing a shortcoming of a previously known load measuring method, states: "due to accelerating forces, the signal generated from the load cell is typically inaccurate during changes in speed of the hoist." (Ruddy, col. 1, ll. 57-65.) Ruddy's invention addresses this problem. (*See id.*, col. 2, ll. 33-41.) "[T]he adaptation process of the invention [of Ruddy] utilizes a transfer function [which includes an inertial component affected by speed changes] between hoist torque and speed to provide an accurate measurement of the weight of the load in real time." (*Id.*, col. 3, ll. 6-9, 19-23.)

7. Appellant concedes that "Ruddy discloses determining the load on a crane hoist and determining a maximum operating speed[.]" (App. Br. 7-8; *see also id.* 7 ("Ruddy discloses a method for measuring a load … and then determining a maximum speed ….").) Ruddy teaches that "the crane hoist system of the [Ruddy] invention adjusts the maximum speed of lifting or lowering the load according to the measured weight of the load, in such a manner so as not to exceed the limitations of the crane hoist system." (Ruddy, col. 3, ll. 15-18; *see also id.*, col. 1, ll. 49-51 ("the load must be measured dynamically in order to compute the maximum safe speed"); col. 13, ll. 46-49 ("[T]he crane hoist system 100 of the invention actually adjusts

the maximum speed according to the weight of the load to respect the power limitation.").)

8. Therefore, Ruddy discloses measuring the load with a weight sensing device and determining the maximum velocity of the load as a function of the measured weight of the load.

9. The prior art of record indicates that the person of ordinary skill in the art of controls for lifting devices (such as workover rigs and crane hoists) has a high level of skill. (*See, e.g.*, Richardson, Fig. 2; Ruddy, col. 3, ll. 6-18, Figs. 1, 2.) The ordinary artisan would understand and be able to apply the fundamental laws of physics involved in safely stopping a load block. (*See, e.g.*, Richardson, col. 8, ll. 52-58.)

PRINCIPLES OF LAW

During examination of a patent application, pending claims are given their broadest reasonable construction consistent with the specification. *In re Prater*, 415 F.2d 1393, 1404-05 (CCPA 1969); *In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004).

"Section 103 forbids issuance of a patent when 'the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.'" *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, ___, 127 S. Ct. 1727, 1734 (2007) (quoting 35 U.S.C. § 103). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, (3) the level of skill

in the art, and (4) where in evidence, so-called secondary considerations. *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17-18 (1966); *see also KSR Int'l Co.*, 550 U.S. at ___, 127 S. Ct. at 1734 ("While the sequence of these questions might be reordered in any particular case, the [*Graham*] factors continue to define the inquiry that controls."). The scope and content of the prior art includes the explicit and inherent teachings of the prior art. *In re Zurko*, 258 F.3d 1379, 1383-84 (Fed. Cir. 2001) (citing *In re Napier*, 55 F.3d 610, 613 (Fed. Cir. 1995)).

In *KSR*, the Supreme Court emphasized "the need for caution in granting a patent based on the combination of elements found in the prior art," *KSR Int'l Co.*, 550 U.S. at ___, 127 S. Ct. at 1739, and discussed circumstances in which a patent might be determined to be obvious. In particular, the Court pointed out that "the principles laid down in *Graham* reaffirmed the 'functional approach' of *Hotchkiss* [*v. Greenwood*], 11 How. 248 [(1851)]." *KSR Int'l Co.,* 550 U.S. at ___, 127 S. Ct. at 1739 (citing *Graham*, 383 U.S. at 12). The Court reiterated that "[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *Id.* at ___, 127 S. Ct. at 1739. The Court also noted that "when a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result." *Id.* at ___, 127 S. Ct. at 1740 (citing *United States v. Adams*, 383 U.S. 39, 50-51 (1966)). The Court explained:

> When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103

> likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.

Id. at ___, 127 S. Ct. at 1740. The operative question in this "functional approach" is thus "whether the improvement is more than the predictable use of prior art elements according to their established functions." *Id.* at ___, 127 S. Ct. at 1740.

Whether a reference teaches away from a claimed invention is a question of fact. *In re Harris,* 409 F.3d 1339, 1341 (Fed. Cir. 2005). "A reference may be said to teach away when a person of ordinary skill, upon reading the reference, ... would be led in a direction divergent from the path that was taken by the applicant." *In re Haruna*, 249 F.3d 1327, 1335 (Fed. Cir. 2001) (quoting *Tec Air, Inc. v. Denso Mfg. Mich. Inc.*, 192 F.3d 1353, 1360 (Fed. Cir. 1999)). "When a piece of prior art 'suggests that the line of development flowing from the reference's disclosure is unlikely to be productive of the result sought by the applicant' the piece of prior art is said to 'teach away' from the claimed invention." *Medichem, S.A. v. Rolabo, S.L.,* 437 F.3d 1157, 1165 (Fed. Cir. 2006) (quoting *In re Gurley,* 27 F.3d 551, 553 (Fed. Cir. 1994)).

ANALYSIS

Appellant argues the rejected claims as a group. (App. Br. 10, 11.) We select claim 4 as the representative claim, and claims 5, 6, 8, and 10-16 stand or fall with claim 4. 37 C.F.R. § 41.37(c)(1)(vii).

Claim 4 recites "comparing the speed of the traveling block to a maximum velocity value, wherein the maximum velocity value is

determined as a function of the measured weight on the traveling block" and "wherein the weight of the traveling block is measured by a weight sensing device[.]" Appellant contends that the cited references fail to disclose this comparison step. (App. Br. 7-8.) Appellant first suggests that Richardson discloses only the use of predetermined parameters, rather than values measured or calculated during operation. (*Id.* 7 (citing Richardson, col. 7, ll. 53-57).) Appellant relies on Richardson's disclosure of an embodiment in which preselected limits of speed and other parameters may be placed in unalterable, read-only memory so that the operator cannot exceed safe limits by changing the parameters (Richardson, col. 7, ll. 51-60). However, Richardson also discloses measuring the exact weight of the traveling block load during operation, and using that measurement to determine the maximum velocity value. (Facts 3, 4.) Similarly, the Ruddy reference discloses measuring the weight of the traveling load with a weight sensing device, and determining the maximum velocity value as a function of that weight. (Facts 5-7.)

Richardson teaches the comparison of the monitored velocity against the preselected maximum velocity. (*See* Fact 2 (quoting Richardson's statement that the computer will slow the load "[i]f the speed of travel being monitored exceeds these preselected parameters[.]").) Again, Richardson also teaches that the maximum velocity may be determined as a function of the measured weight of the traveling block, rather than using a preselected value. (Facts 3, 4.) Thus, one of ordinary skill would understand Richardson to teach comparing the block speed with the calculated maximum velocity. Appellant's assertion that Ruddy does not teach the comparing step (App. Br. 7-8) is misplaced, as the rejection is based on the

combination of the references' teachings, and Richardson teaches the comparison step.

Appellant contends that "Ruddy clearly teaches away from the use of weight sensors for dynamic determination of the block weight," and, therefore, a person of ordinary skill would have no reasonable expectation of success in combining the cited references to arrive at the claimed invention. (App. Br. 8.) Appellant asserts that "Ruddy states that the signal generated from the load cell in a dynamic environment is typically inaccurate." (*Id.*) Appellant is referring to Ruddy's discussion of the shortcomings of a prior art method (*see* Fact 6). Ruddy discloses an improved system of accurately measuring the weight of the load. (*Id.*) We do not find that Ruddy teaches away from the use of a weight sensor to measure the weight of the traveling block.

Appellant also argues that the combination of the cited references fails to teach that the length of the upper slow down zone is proportional to the momentum of the traveling block. (App. Br. 8.) Appellant appears to assert that he has challenged the Examiner's reliance on Official Notice of the fact that this proportional relationship was well known in the art. (App. Br. 9-10.) However, the Examiner relies on Richardson, not Official Notice, for the teaching of a slow down zone length proportional to block momentum. (*See* Final Rej. 2, 5-6.)

Appellant's claim 4 recites that the upper slow down zone is proportional to the block momentum, but does not require a specific proportionality factor. The momentum of the block, according to the Appellant, is the product of the weight on the block and the velocity of the block. (Spec. 9, l. 30 – 10, l. 1; *but see id.*, Fig. 8 (stating the correct

equation, "Momentum = M[ass] x V[elocity]").) Richardson discloses an example in which a block with an unspecified "empty" weight and being raised at a velocity of 7.5 ft/s has a slow down zone beginning at twenty feet from the crown block. (Fact 2.) Twenty feet is proportional to the block momentum (weight x 7.5 ft/s), notwithstanding that Richardson does not disclose the specific proportionality factor. Thus, Richardson discloses a slow down zone length that is proportional to the momentum of the traveling block.

Appellant again contends that Richardson's disclosed parameters are unalterably pre-set and, therefore, the slow down zone length cannot be proportional to the actual, calculated momentum of the traveling block. (App. Br. 9.) Even assuming that the claimed invention excludes pre-set parameters, Appellant's argument is unconvincing as Richardson does disclose measuring the block velocity during operation and teaches utilizing the exact load weight (measured during operation) to calculate the slow down zone length and maximum velocity. (Facts 2, 3.)

Appellant reiterates the "unalterably pre-set" argument by characterizing Richardson as disclosing using the exact load weight to accurately determine the velocity of the block, and stating that "in the very next sentence [of Richardson], this value is still compared against the pre-selected maximum velocity value[.]" (App. Br. 11 (emphasis in original).) Appellant is apparently erroneously referring to Richardson's indication that the exact load is compared to "a predetermined maximum load" (not the maximum velocity) so as to avoid overloading the crane (Richardson, col. 9, ll. 35-40).

Appellant also argues that there is no suggestion or motivation to combine the references. (App. Br. 10, 11.) This argument is foreclosed by *KSR*, in which the Court rejected the rigid requirement of a teaching, suggestion or motivation to combine known elements in order to show obviousness. *KSR Int'l Co.*, 550 U.S. at ___, 127 S. Ct. at 1741. The Court noted that an obviousness analysis "need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *Id.* at ___, 127 S. Ct. at 1741.

Richardson discloses a system for controlling the speed of a traveling block in which various parameters are measured or calculated during operation, speed comparisons are made, and the speed is adjusted so as to keep it below the maximum velocity. (Facts 1-4.) Ruddy teaches measuring the load weight on a crane with a weight sensing device and discloses that the maximum load velocity is determined as a function of the weight. (Facts 5-8.) One of ordinary skill in the art would understand and be able to apply the fundamental laws of physics involved in safely stopping a load block. (Fact 9.) Therefore, the subject matter of Appellant's claim 4 is merely the combination of prior art elements according to known methods to yield predictable results. *See KSR Int'l Co.*, 550 U.S. at ___, 127 S. Ct. at 1739. Appellant has not persuaded us of error in the Examiner's conclusion of obviousness of claim 4, and claims 5, 6, 8, and 10-16, which fall with claim 4.

CONCLUSION

We conclude that the Appellant has failed to show that the Examiner erred in rejecting claims 4-6, 8, and 10-16 under 35 U.S.C. § 103(a) as being unpatentable over Richardson and Ruddy.

DECISION

The decision of the Examiner to reject claims 4-6, 8, and 10-16 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv) (2007).

AFFIRMED

vsh

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